Administrative Report

SEASONAL ABUNDANCE OF FISH IN AN INSHORE AREA OF SOUTHCENTRAL LAKE ERIE, 1974-75

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The inshore fish stocks and their habitats in the Great Lakes are subject to many actual and potential adverse effects of man's activities. Drainage of wetlands, diking, dredging, and spoils disposal can degrade or even destroy valuable spawning or nursery areas. In addition, large quantities of water are used by many industries, utilities, and municipalities. The withdrawal, use, and discharge of water can have a significant impact on the aquatic ecosystem as a result of: (1) impingement of organisms on the intake screens, (2) entrainment of small organisms through the plants, and (3) discharge of heated water and toxic chemicals into the lake. Knowledge of the distribution and seasonal abundance of fish in an area of such ongoing and proposed activities is essential to predict whether the fish community and its critical habitat will be adversely affected.

In this study the Great Lakes Fishery Laboratory examined the seasonal abundance of fishes in an inshore area (out to 10-m depth) of southcentral Lake Erie from April through August 1974 and April through December 1975 by sampling with fry tow nets, bottom trawls, and experimental gillnets. The sampling was conducted near the proposed site of a nuclear power plant, approximately 5.5 km east of Huron, Ohio. The geography of this area is typical of much of the southwest shoreline of Lake Erie's central basin.

Description of the Study Area

The shoreline at the sampling site east of Huron is dominated by a 3- to 10-m high clay bank. The water-shore interface is rugged with many large rocks and small areas of beach. The bottom material in the shallowest inshore area consists of shale bedrock which is covered by unconsolidated deposits of silt and clay as the water depth increases. The prevailing currents in this area are from east to west nearshore and the reverse offshore. The area is also exposed to currents produced especially by winds blowing from the northwest to the northeast.

Methods and Materials

A total of 154 fry net tows were made in 1974. Simultaneous surface and midwater tows were made parallel to shore at distances of 500, 1000, 2000, 3000, 4000, 5000, and 6000 m from shore. Depths at these locations were 4.6, 5.9, 7.0, 8.3, 8.9, 9.2, and 9.9 m, respectively. Sampling dates were May 16 and 30, June 6, 12, and 20, July 1, 16, and 25, and August 2, 9, and 16. Nets, constructed of #000 Nitex and 0.5 m in diameter, were towed for 3 min at a speed of 3.2-4.8 km/h. A flow meter was attached to the mouth of each net and the average quantity of water filtered was 61.4 m^3 in the surface and 67.4 m^3 in the midwater tows. More water was filtered in midwater tows most probably due to more time required to set and retrieve the net. All fry collected were preserved in 5% formalin for later identification and enumeration. The abundance of fry at each location and depth was calculated on the basis of number per 1,000 m^3 of water filtered. No compensation was made for the filtering efficiency of the net or gear avoidance by the fry as they increased in

size during the season.

Experimental nylon gillnets were fished on the bottom along the contour at depths of 5 and 8 m. Each net consisted of one 7.6 x 1.8 m panel each of three mesh sizes (2.5, 3.8, 5.1 cm stretched) and one 15.2 x 1.8 m panel each of eight mesh sizes (6.4, 7.6, 8.9, 10.0, 11.5, 12.7, and 14.0 cm). Nets were set in the early afternoon and lifted the following morning. After the nets were pulled, the fish were removed, sorted by species and age group, and counted. In 1974, nets were set on April 1, May 16, July 1, July 25, and August 27. In 1975, nets were fished on April 16 and 30, May 15 and 29, June 11 and 20, July 2, 16, and 30, August 14 and 26, September 12 and 29, October 8 and 23, November 4 and 19, and December 4.

A semiballoon bottom trawl with a 7.9-m headrope and a cod end of 13-mm netting (stretched measure) was fished at the 3 and 10 m depths. Paired 10-minute tows were made at each depth at a speed of 3.2-4.8 km/h. Tows were made in 1974 on July 1, 17, and 24, August 2, 9, 16, and 27, September 6, 12, 19, and 25, and October 4 and 10; and in 1975 tows were made on May 19 and June 12. All fish caught were sorted to species and age group and counted.

Temperatures were monitored in 1974 with a constant recording thermograph with the thermocouple positioned about 27 cm above the bottom in water 8.5-m deep. Temperatures recorded on the tapes were read to the nearest 0.1 C at 6-h intervals (Fig. 1). In addition, surface water temperatures and meterological observations were recorded during each sampling operation.

Results

Fry net catches. Fry nets captured only six species of larval fish during 1974 (Table 1). Emerald shiners were by far the most abundant followed by rainbow smelt, gizzard shad, alewives, yellow perch, and trout-perch. No fry were taken on the first sampling date, May 16 (Table 2). Yellow perch was the first species captured (May 30) followed by rainbow smelt (June 12), gizzard shad (June 20), and alewives and emerald shiners (July 1). Water temperatures (C) on the first date of capture of each species were yellow perch (16.2), rainbow smelt (16.9), gizzard shad (19.8), alewives (19.7), and emerald shiners (19.7). Fish of each species were generally captured with the fry net for only a few weeks (Table 2). Small numbers of perch were caught on May 30 and June 6 and 12, after which they presumably were able to avoid the fry net. With only three exceptions, more rainbow smelt were taken in the midwater tows than at the surface. No smelt were caught after July 1. Gizzard shad were taken in small numbers from June 20 to August 9; however, most were caught on July 16 at a water temperature of 24.3 C (Table 2). Alewives were taken only on July 1 and 16. Emerald shiners, the most abundant species, were first taken on July 1 and continued to be taken in decreasing numbers through August 9. The bulk of these were taken on July 16, with the greatest concentration in midwater tows. No fry were captured after August 9.

Bottom trawl catches. The 60 paired trawl hauls made at the 3- and 10-m depths during 1974-75 captured 83,000 fish of 21 species (Table 1). Most prominent in the catch numerically were gizzard shad (45%), emerald shiners(23%), spottail shiners (10%), trout-perch (6%),

alewives (5%), freshwater drum (4%), and yellow perch (3%).

Fourteen species of young-of-the-year fishes (YOY) were taken, most of which first became large enough to be vulnerable to capture in mid-July (Table 3). Ten species occurred regularly in the catches: food fishes such as white bass, yellow perch, and walleyes; and forage fishes such as alewives, gizzard shad, rainbow smelt, emerald and spottail shiners, and trout-perch. The fish exhibited some preferences for water depth. Alewives, emerald and spottail shiners, and gizzard shad (except for one large catch) were more abundant at 3 m while rainbow smelt, yellow perch, freshwater drum, and trout-perch (except for one large catch) were more abundant at 10 m. Also noteworthy was the catch of one YOY muskellunge, a species considered rare in Ohio waters.

Bottom trawls captured 20 species of age I and older fish plus a goldfish X carp hybrid (Table 4). Predominant species in the catches were emerald and spottail shiners, freshwater drum, yellow perch, and trout-perch. Other species caught regularly but in lower numbers were rainbow smelt, goldfish, carp, channel catfish, and white bass. Among these I+ and older fish, species more abundant at 3 m were emerald shiners and white bass, while rainbow smelt, channel catfish, yellow perch, and freshwater drum were more abundant at 10 m.

Gillnet catches. Gillnets were fished during only a portion of the field season in 1974, but were usually set twice a month from April through December 1975. A total of 10,497 fish were taken during the 2 years. The relative proportions of the more abundant species Age I and older were similar each year (Tables 6 and 7). Spottail shiners made up 32% of the total in 1974 and 33% in 1975. Gizzard shad, yellow perch,

and drum were also represented in similar proportions each year. Poorly represented in the 1974 collection, alewives made up over 20% of the total number of fish taken in gillnets in 1975.

Only eight of YOY species attained sizes large enough to become vulnerable to the experimental gillnets during the growing season (Table 5). Gizzard shad were most numerous by far, being taken from early August to mid-November. White bass and freshwater drum were captured regularly during the same time period, though in much smaller numbers. Other than white bass, the few YOY food fish taken with gillnets were walleyes, yellow perch, saugers, and white crappies.

Considering age I and older fish captured with gillnets (Table 6), 32 species were taken plus a goldfish X carp hybrid. Numerically abundant species were, in decreasing order, spottail shiners, alewives, gizzard shad, yellow perch, freshwater drum, carp, rainbow smelt, and white bass. Species regularly captured but in low numbers included emerald shiners, channel catfish, white suckers, walleye, stonecats, white crappies, quillbacks, and goldfish. Most species age I and older tended to be more abundant at 5 m than at 8 m (Tables 6 and 7). These were spottail shiners, gizzard shad, white bass, channel catfish, white suckers, white crappies, quillbacks, and goldfish. Freshwater drum and yellow perch were clearly more abundant at 8 m than 5 m. Seasonal trends in abundance of some species were marked. Alewives were present in large numbers only during June-July. Rainbow smelt, taken only during spring and fall when water temperatures were low, probably move offshore to deeper, colder waters during summer months. Yellow perch and spottail shiners, probably members of nearshore spawning concentrations, were captured in large numbers only in April and May, respectively.

A few species of fish uncommon to Lake Erie were taken occasionally by gillnets during this study (Tables 6 and 7). We caught a small lake sturgeon (presently on the Ohio endangered species list) in July 1975; a sea lamprey in October 1975; an adult bowfin in May 1975; a northern pike in August 1974, and another in June 1975; a northern hog sucker in October 1975; a white perch, a recent invader from Lake Ontario in April 1975; and five saugers, stocked by the Ohio Department of Natural Resources, during October and November 1975.

Comments

A total of 35 species of fish were taken with fry nets, gillnets, and trawls from the subject area in southcentral Lake Erie during 1974 and 1975. Both cold- and warmwater species were present at this site at different times of the year; however, warmwater species dominated the catch by far.

This area appears to be a major spawning and nursery area for emerald shiners, the most valuable forage and bait minnow species present in the lake. Other larval fish were taken in much smaller numbers. This area is also the nursery area for several other species of YOY fish as indicated by trawl catches made throughout the summer. Species taken in substantial numbers include forage fishes such as gizzard shad, spottail shiners, trout-perch, and alewife and food fishes such as yellow perch, white bass, walleye, rainbow smelt, and freshwater drum.

Various subadult and adult fishes inhabit this area at certain times of the year as shown by gillnet and trawl catches. Coho salmon are present in considerable numbers in the spring. Rainbow smelt are common during the spring and fall. Other major sport and commercial species taken throughout

the late spring and summer include walleyes, yellow perch, channel catfish, white bass, carp, and freshwater drum. Uncommon species taken in this area, some considered rare or endangered in Ohio's waters, include muskellunge, lake sturgeon, sauger, and northern pike.

Our surveys show that the fish community in the area examined is composed of substantial numbers of valuable sport, commercial, and forage species. The surveys also show differences in seasonal abundance and depth preference. Considering the recreational, commercial, and ecological value of this diversified group of fishes, all reasonable precautions should be taken to minimize any adverse effects on the ecosystem as the result of man's activities.

Acknowledgment

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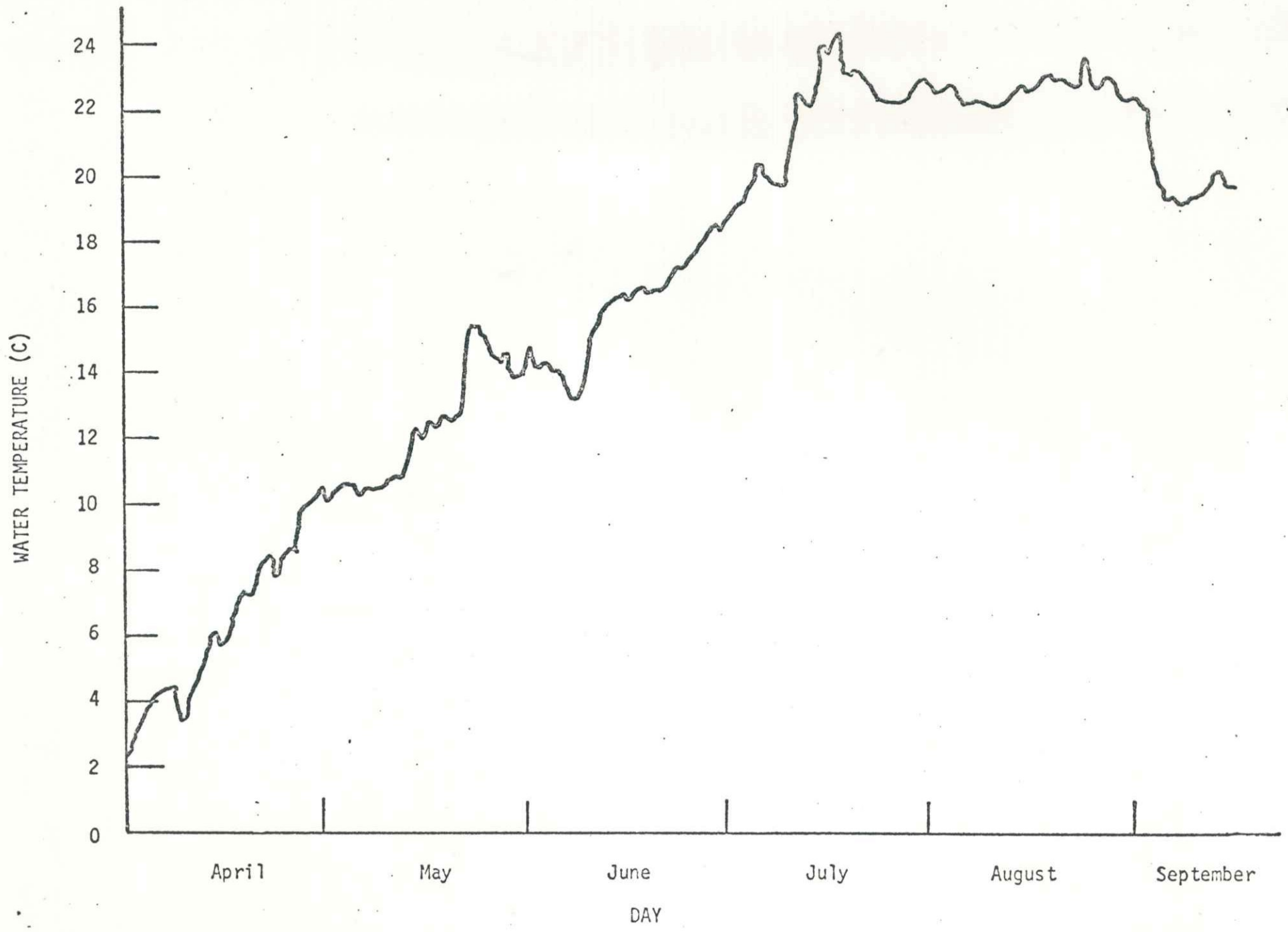

Fig. 1. Mean daily water temperature at 8.5 m in Lake Erie near Berlin Heights, Ohio, 1974.

Table 1. Name and number of fishes taken by fry net, gillnet, and trawl in southcentral Lake Erie during 1974 and 1975.

Common Name	Scientific Name	1974				1975			Grand Total
		Fry net	Trawl	Gill	Total	Trawl	Gill	Total	
Sea lamprey	*Petromyzon marinus* Linnaeus	--	--	--	0	--	1	1	1
Lake sturgeon	*Acipenser fulvescens* Rafinesque	--	--	--	0	--	1	1	1
Bowfin	*Amia calva* Linnaeus	--	--	--	0	--	1	1	1
Alewife	*Alosa pseudoharengus* (Wilson)	18	3,751	21	3,790	1	1,821	1,822	5,612
Gizzard shad	*Dorosoma cepedianum* (Lesueur)	64	37,303	247	37,614	1	1,267	1,268	38,882
Coho salmon	*Oncorhynchus kisutch* (Walbaum)	--	--	1	1	--	38	38	39
Chinook salmon	*Oncorhynchus tshawytscha* (Walbaum)	--	--	2	2	--	--	0	2
Rainbow smelt	*Osmerus mordax* (Mitchill)	96	984	1	1,081	179	417	596	1,677
Northern pike	*Esox lucius* Linnaeus	--	--	1	1	--	1	1	2
Muskellunge	*Esox masquinongy* Mitchill	--	1	--	1	--	--	0	1
Goldfish	*Carassius auratus* (Linnaeus)	--	109	7	116	3	16	19	135
Carp	*Cyprinus carpio* Linnaeus	--	97	139	236	6	318	324	560
Goldfish X carp hybrid		--	5	--	5	2	19	21	26
Silver chub	*Hybopsis storeriana* (Kirtland)	--	1	--	1	--	--	0	1
Emerald shiner	*Notropis atherinoides* Rafinesque	19,074	18,412	40	37,526	356	142	498	38,024
Spottail shiner	*Notropis hudsonius* (Clinton)	--	7,558	490	8,048	949	2,982	3,931	11,979
Quillback	*Carpiodes cyprinus* (Lesueur)	--	--	4	4	--	26	26	30
White sucker	*Catostomus commersoni* (Lacépède)	--	1	23	24	--	50	50	74
Northern hog sucker	*Hypentelium nigricans* (Lesueur)	--	--	--	0	--	1	1	1
Shorthead redhorse	*Moxostoma macrolepidotum* (Lesueur)	--	--	--	0	--	20	20	20
Brown bullhead	*Ictalurus nebulosus* (Lesueur)	--	7	1	8	1	--	1	9
Channel catfish	*Ictalurus punctatus* (Rafinesque)	--	76	59	135	11	43	54	189
Stonecat	*Noturus flavus* Rafinesque	--	8	11	19	1	52	53	72
Trout-perch	*Percopsis omiscomaycus* (Walbaum)	1	4,617	8	4,626	196	8	204	4,830
White perch	*Morone americana* (Gmelin)	--	--	--	0	--	1	1	1
White bass	*Morone chrysops* (Rafinesque)	--	1,938	63	2,001	26	230	256	2,257
Rock bass	*Ambloplites rupestris* (Rafinesque)	--	--	2	2	--	--	0	2
Bluegill	*Lepomis macrochirus* Rafinesque	--	1	--	1	--	--	0	1
Smallmouth bass	*Micropterus dolomieui* Lacépède	--	--	--	0	--	2	2	2
White crappie	*Pomoxis annularis* Rafinesque	--	102	32	134	--	10	10	144
Black crappie	*Pomoxis nigromaculatus* (Lesueur)	--	--	--	0	--	1	1	1
Yellow perch	*Perca flavescens* (Mitchill)	14	2,567	154	2,735	86	669	755	3,490
Logperch	*Percina caprodes* (Rafinesque)	--	8	--	8	2	2	4	12
Sauger	*Stizostedion canadense* (Smith)	--	--	--	0	--	5	5	5
Walleye	*Stizostedion vitreum vitreum* (Mitchill)	--	96	8	104	1	65	55	170
Freshwater drum	*Aplodinotus grunniens* Rafinesque	--	3,449	217	3,666	110	757	867	4,533
Total		19,267	81,091	1,531	101,889	1,931	8,966	10,897	112,786

Table 2.--Numbers of fish captured per 1,000 m^3 of water in surface (S) and middepth (M) fry-net tows at Berlin Heights, Ohio, in south-central Lake Erie, 1974. Sampling was conducted on May 16, 30; June 6, 12, 20; July 1, 16, 25; and August 2, 9, 16, but only those dates on which fry were collected are shown for each species.

Date	Water depth (m)													
	4.6		5.9		7.0		8.3		8.9		9.2		9.9	
	S	M	S	M	S	M	S	M	S	M	S	M	S	M
Yellow perch														
May 30	0	0	0	0	0	0	17	0	0	15	0	29	0	0
June 6	0	15	0	30	16	0	0	0	0	0	0	0	16	0
June 12	0	0	17	0	36	0	17	0	0	0	17	0	17	0
Rainbow smelt														
June 12	71	17	0	47	0	70	17	104	18	72	34	132	0	157
June 20	0	15	0	0	0	0	16	155	0	27	0	14	0	77
July 1	0	15	51	0	50	15	52	99	52	148	0	0	0	0
Gizzard shad														
June 20	0	0	0	14	0	0	0	0	0	0	0	0	0	0
July 1	0	0	0	0	0	0	0	0	0	0	97	43	192	41
July 16	17	107	51	72	34	17	51	16	68	62	139	0	16	34
Aug. 9	0	0	0	0	0	0	0	0	0	0	0	14	0	0
Alewives														
July 1	0	0	0	0	0	0	0	0	0	0	0	0	112	0
July 16	0	0	0	72	0	0	0	0	34	0	52	0	32	0
Emerald shiners														
July 1	0	15	0	0	33	0	137	70	121	49	16	43	16	8
July 16	5,395	74,454	21,517	57,163	3,936	6,138	10,326	13,280	2,593	5,697	7,863	57,037	23,977	36,973
July 25	0	0	0	0	0	15	0	14	273	55	42	0	15	69
Aug. 2	0	15	15	0	32	0	31	0	31	0	65	0	49	0
Aug. 9	44	15	0	0	15	0	0	0	15	14	15	28	15	0

Table 3. Number of young-of-the-year fish caught in two bottom trawl tows on each date at each of two depths at Berlin Heights, Ohio, south-central Lake Erie during 1974.

Species	July			August				September				October		Total
	1	16	25	2	9	16	27	6	12	19	25	4	10	
							3 meters							
Alewife	0	0	0	1,540	88	0	0	0	28	198	288	392	1	2,535
Gizzard shad	0	105	466	12	16	420	672	488	744	448	524	284	410	4,589
Rainbow smelt	25	24	5	4	7	0	8	228	0	4	0	0	1	306
Muskellunge	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Emerald shiner	0	0	0	0	21	0	8	0	40	4,040	0	16	7	4,132
Spottail shiner	0	11	36	8	46	100	2,432	648	676	104	0	84	66	4,211
Channel catfish	0	0	0	0	0	0	0	2	4	0	0	0	0	6
Trout-perch	1	16	0	20	37	0	2,976	4	24	0	0	8	2	3,088
White bass	0	0	21	176	100	76	72	86	56	100	25	60	28	800
White crappie	0	0	0	0	0	0	0	2	0	0	0	16	0	18
Yellow perch	6	24	0	0	0	0	24	0	8	0	0	0	0	62
Logperch	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Walleye	0	0	0	0	5	4	28	0	2	1	0	0	0	40
Freshwater drum	0	0	0	0	6	40	360	44	28	4	0	0	0	482
							10 meters							
Alewife	0	0	0	7	236	640	38	2	28	98	36	20	103	1,208
Gizzard shad	0	0	32,240	1	0	0	18	30	10	44	4	0	367	31,714
Rainbow smelt	6	12	182	11	116	40	0	5	26	12	28	0	238	676
Emerald shiner	0	2	0	0	692	0	2	9	22	54	4	0	72	857
Spottail shiner	0	29	13	5	6	288	15	87	184	380	392	68	316	1,783
Trout-perch	0	106	221	95	150	392	1	42	30	48	40	24	59	1,208
White bass	0	1	0	335	40	520	50	4	26	48	32	8	26	1,090
White crappie	0	0	0	0	0	0	0	0	0	4	24	0	34	62
Yellow perch	0	170	508	22	574	104	136	12	34	20	28	12	34	1,654
Logperch	0	0	0	0	0	0	0	1	0	0	1	0	4	6
Walleye	0	8	1	8	3	10	0	1	2	3	2	6	8	52
Freshwater drum	0	1	0	13	94	300	3	587	220	148	224	452	26	2,068

Table 4. Number of age I and older fish caught in two bottom trawl tows on each date at each of two depths at Berlin Heights, Ohio, southcentral Lake Erie.

Species	1975					1974										Total
	May	June	July			August				September				October		
	19	12	1	16	25	2	9	16	27	6	12	19	25	4	10	
							3 meters									
Gizzard shad	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Rainbow smelt	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	3
Goldfish	3	0	9	0	0	1	4	10	7	0	7	0	0	0	0	41
Carp	2	0	0	1	3	18	2	4	3	0	7	0	1	0	0	41
Goldfish x carp	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	4
Silver chub	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Emerald shiner	120	20	53	9,037	42	104	3	4	8	2	12	156	8	284	29	9,882
Spottail shiner	374	284	21	11	0	108	8	76	32	36	104	52	12	172	149	1,439
Brown bullhead	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Channel catfish	0	0	1	13	0	0	0	0	3	0	0	0	0	0	0	17
Stonecat	0	0	2	1	0	0	0	0	0	4	0	0	0	0	0	7
Trout-perch	2	12	0	0	0	0	0	0	184	2	12	0	0	0	0	212
White bass	7	12	18	13	5	4	0	0	0	0	2	0	0	0	0	61
Bluegill	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
White crappie	0	0	1	0	0	2	7	4	4	0	1	0	0	0	0	19
Yellow perch	1	5	4	3	3	10	4	4	24	10	13	5	3	8	1	98
Log perch	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
Walleye	1	0	1	1	0	1	0	0	0	1	0	0	0	0	0	5
Freshwater drum	1	1	0	9	0	2	4	4	7	0	2	0	0	0	0	30
							10 meters									
Alewife	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Rainbow smelt	157	21	7	0	0	0	0	0	0	0	0	0	1	0	0	186
Goldfish	0	0	0	0	0	1	1	3	2	1	0	12	9	38	4	71
Carp	0	4	5	0	10	3	3	10	2	3	5	6	2	6	3	62
Goldfish x carp	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	3
Emerald shiner	201	15	107	30	1,348	139	1,124	268	86	1	158	128	100	8	184	3,897
Spottail shiner	157	134	37	51	143	53	46	188	51	13	29	84	20	16	52	1,074
White sucker	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Brown bullhead	0	0	0	0	0	0	0	0	0	1	4	0	0	1	0	6
Channel catfish	1	10	1	1	6	1	5	14	1	11	9	2	0	2	0	64
Stonecat	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
Trout-perch	118	64	2	42	0	24	16	12	1	4	10	8	0	4	0	305
White bass	4	3	0	0	1	1	0	0	0	1	0	0	0	3	0	13
White crappie	0	0	0	0	0	0	0	2	0	0	0	0	1	0	0	3
Yellow perch	17	63	8	20	156	49	45	26	64	41	95	50	55	37	113	830
Freshwater drum	27	81	17	141	75	55	97	146	33	72	33	31	88	73	10	979

Table 5.--Numbers of young-of-the-year fish captured with a gill net fished at each of two depths at Berlin Heights, Ohio, south-central Lake Erie monthly April-August 1974 and twice monthly April-December 1975. Only those dates on which young-of-the-year were captured are included.

Species	1974	1975								Total
	Aug	Aug		Sept		Oct		Nov		
	27	14	26	12	29	8	23	4	18	
				5 meters						
Alewife	0	0	0	0	1	0	0	0	0	1
Gizzard shad	119	15	196	103	1	33	9	12	21	509
White bass	2	26	2	0	4	2	2	1	1	40
Sauger	0	0	0	0	0	1	0	0	0	1
Walleye	0	0	0	0	0	0	0	1	0	1
Freshwater drum	4	3	0	0	22	3	0	0	0	32
				8 meters						
Alewife	0	0	5	0	0	0	5	0	0	10
Gizzard shad	39	0	141	230	2	5	0	7	6	430
White bass	9	2	4	22	0	1	0	0	1	39
White crappie	0	0	0	0	0	0	1	0	0	1
Walleye	4	0	0	0	0	0	0	0	0	4
Freshwater drum	15	1	0	3	3	8	1	0	0	31

Table 6.--Catch of Age-I and older fish in a gill net fished in 5 m of water at Berlin Heights, Ohio, south-central Lake Erie.

	1974					1975																			
	Apr	May	July		Aug	April		May		June		July			Aug		Sept		Oct		Nov		Dec	Total
	1	16	1	25	27	16	30	15	29	11	20	2	16	30	14	26	12	29	8	23	4	18	1	
Lake sturgeon	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Bowfin	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Alewife	1	7	11	2	0	0	0	2	1	28	175	483	219	89	0	0	0	0	0	2	1	0	0	1,021
Gizzard shad	0	0	29	40	6	0	0	3	0	18	2	19	50	14	24	22	3	35	0	164	23	5	9	466
Coho salmon	0	1	0	0	0	36	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39
Rainbow smelt	0	1	0	0	0	16	2	1	3	0	0	0	0	0	0	0	0	0	6	2	31	99	39	200
Northern pike	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Goldfish	0	0	0	6	1	0	0	0	1	0	0	7	0	0	0	0	0	0	0	0	1	1	0	17
Carp	2	8	2	50	12	12	1	12	2	13	2	16	20	23	16	19	15	10	1	0	9	9	2	256
Goldfish X carp	0	0	0	0	0	0	0	2	0	0	0	5	1	0	0	2	0	0	0	0	0	0	0	10
Emerald shiner	0	0	11	6	0	0	1	0	2	6	44	0	1	12	0	0	0	0	0	0	0	0	0	83
Spottail shiner	1	49	117	52	14	47	46	664	674	121	85	10	61	8	4	3	0	11	3	7	34	13	1	2,025
Quillback	0	0	1	0	3	0	1	1	1	0	1	0	2	4	4	5	0	0	0	0	2	2	0	27
White sucker	2	6	3	1	3	1	2	3	10	6	0	0	1	1	0	0	3	0	0	0	1	0	1	44
Northern hogsucker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Shorthead redhorse	0	0	0	0	0	1	3	0	1	0	0	2	0	0	0	0	0	1	0	1	1	0	0	10
Brown bullhead	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Channel catfish	0	5	0	36	1	1	0	5	2	2	6	4	2	1	2	1	1	0	0	1	0	0	0	70
Stonecat	0	0	2	0	3	0	0	0	0	2	0	0	1	0	2	4	7	2	10	2	0	0	0	35
Trout-perch	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
White perch	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
White bass	2	6	3	5	15	7	5	32	1	2	7	3	10	3	0	15	0	1	0	17	14	4	0	152
Rockbass	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Smallmouth bass	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
White crappie	0	0	0	2	22	0	0	0	0	1	0	0	0	1	1	3	0	0	0	1	1	0	0	32
Yellow perch	0	22	31	23	8	2	120	38	28	8	18	3	13	5	5	5	6	4	1	6	0	0	0	346
Logperch	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Sauger	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	4
Walleye	0	0	0	1	1	0	0	5	0	1	0	0	6	4	3	7	2	0	1	5	0	3	0	39
Freshwater drum	1	43	4	13	10	5	23	49	64	8	28	2	2	26	7	0	5	1	0	0	0	0	0	291

Table 7. Catch of age-I and older fish in a gillnet fished in 8 m of water at Berlin Heights, Ohio, Southcentral Lake Erie.

Species	1974					1975																		Total
	Apr.	May	July		Aug.	Apr.		May		June		July			Aug.		Sept.		Oct.		Nov.		Dec.	
	1	16	1	25	27	16	30	15	29	11	20	2	16	30	14	26	12	29	8	23	4	18	1	
Sea lamprey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Alewife	0	0	0	0	0	0	0	0	0	16	13	587	168	26	0	0	0	0	0	0	0	0	0	810
Gizzard shad	0	0	8	4	2	0	0	0	0	3	0	0	3	1	9	30	1	30	0	8	7	0	3	109
Chinook salmon	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Rainbow smelt	0	0	0	0	0	0	3	3	32	2	0	0	0	0	0	0	0	0	0	3	52	74	49	218
Goldfish	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	1	0	1	6
Carp	1	0	8	18	38	0	0	5	1	11	0	1	6	26	18	18	4	8	7	14	1	8	8	201
Goldfish X Carp	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	3	0	2	0	0	0	0	9
Emerald shiner	0	0	15	8	0	0	0	1	0	4	53	0	17	0	1	0	0	0	0	0	0	0	0	99
Spottail shiner	5	11	83	96	62	15	75	607	275	26	28	49	19	23	0	4	4	0	7	3	27	23	5	1447
Quillback	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	3
White sucker	1	5	1	1	0	0	0	2	10	1	3	0	0	0	1	1	0	2	0	0	1	0	0	29
Shorthead redhorse	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	6	0	0	1	0	10
Channel catfish	1	5	0	11	0	1	2	0	1	1	0	0	2	1	1	1	2	1	2	0	0	0	0	32
Stonecat	0	2	3	1	0	0	0	0	1	3	0	0	1	0	0	4	5	2	4	0	2	0	0	28
Trout-perch	2	0	1	0	3	0	1	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	10
White bass	7	2	2	1	9	4	1	3	0	3	1	0	3	2	4	7	5	0	3	3	2	0	0	62
Rockbass	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
White crappie	0	0	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9
Black crappie	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Yellow perch	0	13	5	20	32	3	140	97	7	12	22	30	35	19	7	1	6	3	7	1	10	7	0	477
Walleye	0	0	0	0	2	0	1	0	0	1	0	0	3	3	2	3	4	0	3	5	2	0	0	29
Freshwater drum	2	48	38	25	14	18	55	143	49	37	18	28	74	46	12	1	0	2	6	3	1	0	0	620